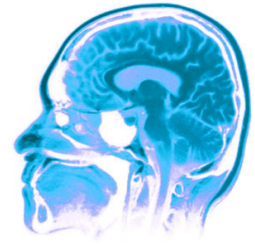


# Dreaming and REM Sleep



## Pre-reading

Questions: What do you know about dreams or REM sleep? What questions do you have?

Definitions: Conscious – awake or aware

Deprive – to keep from having or doing

Fragment – broken or incomplete part

## Reading

We typically spend more than 2 hours each night dreaming. Scientists do not know much about how or why we dream. Sigmund Freud, who greatly influenced the field of psychology, believed dreaming was a “safety valve” for unconscious desires.

In 1953, researchers first described REM, rapid eye movement, in sleeping infants. It was after this that scientists began to study sleep and dreaming. They soon realized that the strange experiences we call dreams occur during REM sleep. While most mammals and birds show signs of REM sleep, reptiles and other cold blooded animals do not.

REM sleep begins with signals from an area at the base of the brain called the pons. These signals travel to a brain region called the thalamus, which relays them to the cerebral cortex – the outer layer of the brain that is responsible for learning, thinking, and organizing information.

The pons also sends signals that shut off neurons to the spinal cord, causing temporary **paralysis** of the limb muscles. If something interferes with this paralysis, people will begin to physically act out their dreams. A person dreaming about a ball game may run head first into a wall or blindly strike someone sleeping nearby while trying to catch a ball in the dream. This rare problem is called *REM sleep behavior disorder*.

REM sleep stimulates the brain regions used in learning. This may be important for normal brain development during infancy. This would explain why infants spend much more time in REM sleep than adults.

One study found that REM sleep affects learning of certain mental skills. People taught a skill and then deprived of non-REM sleep could recall what they had learned after sleeping. People deprived of REM sleep could not recall what they had learned after sleeping.

Some scientists believe dreams are the cortex’s attempt to find meaning in the random signals that it receives during REM sleep. The cortex is the part of the brain that interprets and organizes information during consciousness. It may also try to interpret the random signals from the pons during REM sleep; thus creating a “story” out of fragmented brain activity.

Source: National Institute of Neurological Disorders and Stroke, *Dreaming and REM Sleep*

**Level 6.5**

## Understanding

1. Where is the cerebral cortex? What is its function? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Which age group spends the most time in REM sleep? Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. What species does not experience REM sleep? \_\_\_\_\_  
\_\_\_\_\_ (This means they don't \_\_\_\_\_.)
4. Where does REM sleep begin? \_\_\_\_\_  
\_\_\_\_\_
5. What is **paralysis**? What causes it while sleeping? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Why do we dream? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. How does REM sleep affect learning? \_\_\_\_\_  
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\_\_\_\_\_

## Writing

Option A: Summarize the reading in your own words.

Option B: What new information did you learn about sleep and dreams? What surprised you?

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